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PSYCHOMETRIC PROPERTIES OF THE FOOT AND ANKLE OUTCOME SCORE (FAOS) IN A COMMUNITY-BASED OSTEOARTHRITIS STUDY

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Purpose: The Foot and Ankle Outcome Score (FAOS) is a 42-item questionnaire with 5 subscales: pain, other symptoms, activities of daily living (ADL), sport and recreational function (Sport/Rec), and foot and ankle related quality of life (QOL). This measure has been validated among 213 Caucasian patients 20–60 years of age with lateral ankle instability. The purpose of this analysis was to determine the psychometric properties of the FAOS in a large, community-based bi-racial sample of males and females 45+ years of age.

Methods: FAOS data were available for analyses from 1670 participants enrolled in the Johnston County Osteoarthritis Project during 2006–2010 (mean age 69 years, 68% female, 31% African American, mean body mass index [BMI] 31.5 kg/m2, 24% with foot symptoms, 15% with ankle symptoms). The FAOS was administered by trained interviewers. Each item was scored 0–4 (none, mild, moderate, severe, and extreme problems), and a normalized score was calculated for each subscale (100 = no problems and 0 = extreme problems). Internal consistency, construct validity, and factor structure of the FAOS subscales were examined for the total sample and for subgroups according to race (African American and Caucasian), gender, age (45–55, 55–65, 65+ years), BMI (<25, 25–30, 30+ kg/m^2), presence of knee or hip osteoarthritis, and presence of chronic knee, hip or low back symptoms (pain, aching, or stiffness on most days).

Results: For the total study sample and all subgroups, the internal consistency was high for the pain (0.95–0.96), ADL (0.97–0.99), Sport/Rec (0.94–0.96), and QOL (0.87–0.92) subscales. The Cronbach's alphas were slightly lower for the symptoms subscale (0.72–0.82). Correlations between FAOS subscales were moderate to high among the full study sample and all subgroups (r = 0.47–0.91). Overall, construct validity was supported for the total sample and subgroups, as the pain and symptoms subscales were moderately correlated with participant report of chronic foot and ankle symptoms (r = −0.25 to −0.55), and the ADL and Sport/Rec subscales were moderately correlated with the function subscale of the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC; worst score of both hips and knees; r = −0.30 to −0.60). Separate principal component analysis for each subscale revealed that all items loaded on a single factor for the pain, ADL, Sport/Rec, and QOL subscales (eigenvalues 6.9, 12.5, 4.3, and 3.2, respectively). For the symptoms subscale, all but the two range of motion items (those addressing straightening and bending foot/ankle fully) loaded on a single factor (eigenvalues: Factor 1 = 3.1, Factor 2 = 1.6). For these two items, the level of problem severity expressed in the response options was reversed compared to other FAOS items. Similar results for each subscale were noted across subgroups.

Conclusion: The FAOS was found to be a valid measure when applied by trained interviewers in this sample and across subgroups. The internal consistency of the symptoms subscale and the lack of all items loading on a single factor may be explained by confusion in responding to the reversed polarity of the two range of motion symptoms items compared to other FAOS items. Alerting interviewers and participants of these differences may improve the performance of the symptoms subscale.

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PREDICTORS OF SUBOPTIMAL PATIENT OUTCOME FOLLOWING TOTAL JOINT ARTHROPLASTY

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Purpose: When medical management of hip or knee arthritis fails, total joint arthroplasty (TJA) is recommended. On average, TJA outcomes are good to excellent, but significant variability has been observed. The determinants of suboptimal TJA outcome have not been well studied; this information would be useful in patient-physician decision making about this procedure. Our aim was to evaluate the determinants of *suboptimal TJA outcome* at a patient level (pain and functioning).

Methods: Participants were members of a longitudinal population cohort with hip/knee arthritis, recruited from 1996–98 through screening 100% aged 55+ years in two regions, one rural and one urban (n = 2,411 at baseline). Annual interviews assessed socio-demographics, arthritis type (OA versus inflammatory arthritis, IA); arthritis severity (WOMAC), other MSK complaints (presence of other troublesome hips/knees, low back pain), joint replaced (hip versus knee), health status (SF36 mental health and general health scores) and comorbidity (0, 1, 2, 3+ conditions). Survey data were linked with health administrative databases to examine receipt of TJA. Previously defined algorithms were used to identify primary, elective TJAs from 1988 to 2008. Suboptimal outcome was defined as a pre-post change in WOMAC summary score < Minimal Important Difference (MID) proposed by Wyrich et al (MID = 0.5 SD change of the mean difference in scores). Pre- and post-surgery WOMAC scores were those obtained at the interview closest in date and prior to the index TJA date, and closest in date to the end of the post-operative period (i.e. 6 months post surgery), respectively. Logistic regression was used to model predictors of sub-optimal outcome. First, Akaike's Information Criterion (AIC) was used to determine the size of the best predictive model, and then all possible subset regression was used to identify the final model of the selected size. Sensitivity analyses used alternate definitions of suboptimal outcome.

Results: 166 cohort members received a primary, elective TJA following their baseline interview and completed a post-TJA assessment. The mean age at TJA was 71 years; most TJA recipients were female and had a knee replaced. Almost half the TJA recipients (48.7%) met the criterion for sub-optimal outcome (reduction in WOMAC score of <9/100 points; 49.5% knees versus 42.4% hips, p = 0.42). In univariate analyses, only the pre-surgery WOMAC score distinguished those with versus without a suboptimal outcome, with a lower (better) score associated with suboptimal outcome. The multivariable predictive model found that the probability of a suboptimal outcome following TJA increased with lower pre-surgery pain and disability (WOMAC summary score) and poorer pre-surgery mental health, and increased if the patient had another troublesome hip/knee and/or a diagnosis of IA (Table 1) (c-statistic 0.79). Using alternate suboptimal outcome definitions provided similar results.

Conclusions: In a population cohort with hip/knee arthritis, almost half experienced a suboptimal outcome, as we defined it. Suboptimal outcome was associated with lower levels of arthritis pain and disability, poor mental health status, and the presence of other troublesome hips/knees or IA diagnosis pre-surgery. These results may help prospective patients and their health care providers make an informed cost-benefit decision on the expected outcomes of the procedure.

Table 1. Variables associated with a suboptimal TJA outcome

Predictor variables	Odds ratio	Confidence Interval	p-value
Pre-surgery WOMAC score, per 10-point increase (increasing values indicate increasing pain and disability)	0.43	0.32 to 0.58	<0.0001
Pre-surgery SF-36 mental health score, per 10-point increase (Increasing SF-36 values indicate improved health)	0.79	0.64 to 0.98	0.031
Presence of 1+ other troublesome hip/knee at surgery	3.06	1.02 to 9.17	0.046
Inflammatory arthritis	8.47	1.70 to 41.7	0.009

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PATTERNS OF POPULATION USE OF TOTAL JOINT ARTHROPLASTY: FOCUS ON OUTCOMES FOLLOWING A SINGLE PRIMARY TJA IS TOO NARROW

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Purpose: When medical management of hip or knee osteoarthritis (OA) fails, total joint arthroplasty (TJA) is recommended. Many studies have evaluated outcomes following TJA and, on average, outcomes are good to excellent. However, these studies have largely focused on recipients of a single hip or knee replacement procedure, excluding those with bilateral or consecutive TJAs during follow-up due to difficulty discriminating the effects of the index TJA from subsequent surgeries on patient-reported outcomes. The extent to which this reduces the generalizability of these studies to all patients receiving TJA is unknown. To address this gap, we

evaluated patterns of use of TJA following an index primary TJA over an 8-year period.

Methods: Primary and revision TJA procedures performed on Ontario, Canada, residents aged 55+ years between April 2002 (baseline) and March 2010 were identified from hospital discharge abstracts using specific ICD-10-CA/CCI procedure and diagnosis codes. The records of individuals who underwent TJA prior to April 1, 2002 (i.e. pre-baseline) were excluded as were non-elective TJAs and those performed for cancer, fractures or trauma. Due to our specific interest in examining the patterns of use of TJA for OA, we also excluded individuals who received their first TJA before age 55 years. Of those aged 55+ years who received their first (index) TJA following April 2002, we examined the proportions with repeat hospitalizations for TJA, and the associated TJA type (elective versus non-elective, hip versus knee, primary versus revision). The maximum follow-up time was 8 years.

Results: Excluding those with a pre-baseline TJA, 164,330 index TJA procedures were identified. Of these, 129,937 were eligible for inclusion (90.4% of TJAs performed in people aged 55+ years). Bilateral knee replacements in the same hospitalization were more frequent (n = 4,460, 3.44%) than were bilateral hip replacements (n = 228, 0.18%). Further, knee replacements as the first TJA were almost twice as common as hip replacements (65.85% versus 34.15%). A total of 33,474 second TJA hospitalizations occurred (25.76% index TJAs were followed by a second TJA hospitalization during the observation period). Of 85,565 index primary knee replacements (4,460 bilateral), 23,984 (28.03%) experienced a second TJA hospitalization, with a median duration (IQR) from the index procedure of 1.37 years (0.63–2.93 years). Of these, 83.68% were for primary TJA of the contra-lateral knee, 1,802 (7.51%) were single or bilateral primary hip replacements, and 2,087 (8.7%) were for revision or one or both index knees. Of 44,372 index primary hip replacements (228 bilateral), 9,490 (21.39%) experienced a second TJA hospitalization with a median duration of 1.21 years (0.64–2.58 years) from the index procedure. Of these, 69.52% were for primary TJA of the contra-lateral hip, 2,193 (23.11%) were single or bilateral primary knee replacements, and 700 (7.38%) were for revision or one or both index hips. Of those who experienced a second TJA hospitalization, 2,561 (1.97% of the cohort) went on to receive a third within a median duration of 2.8 years (IQR 1.1–4.1 years) from the index procedure; the majority (89.54%) of these were elective TJAs.

Conclusions: In a population cohort undergoing primary hip or knee TJA, repeat TJA hospitalizations are frequent; approximately one-quarter experienced a second TJA hospitalization, which was most often for primary TJA of the contra-lateral hip or knee. Most repeat hospitalizations occurred within 3 years of the index TJA. Together, these data suggest that exclusion of such individuals from TJA cohort studies reduces the generalizability of results to all patients undergoing primary TJA. Researchers are encouraged to incorporate these subsequent TJA hospitalizations in examining the risks and benefits of this common procedure.

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ELDERLY MEN WITH HIP OSTEOARTHRITIS ARE FRAIL AND FRAILTY REMAINS AFTER TOTAL HIP REPLACEMENT IN THE MROS COHORT

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Purpose: To examine the association of radiographic hip osteoarthritis (RHOA) or total hip replacement (THR) with prevalent frailty status in elderly men. Previous studies have shown that frailty is associated with co-morbidities and increased mortality.

Methods: We conducted a cross-sectional study in the Osteoporotic Fractures in Men (MrOS) Study, a cohort of 5994 men age ≥65 yrs. at baseline. We included all men without prior hip fracture who had a hip radiograph obtained at visit 2 (4.6±0.35 yrs from baseline) and measurements for assessment of frailty status at visit 2. We defined frailty using the Fried definition as three or more of the following components: unintentional weight loss defined as >5% weight loss from baseline to visit 2; weakness defined as low grip strength; self-reported exhaustion; low activity level, and slow walking speed. Men with intermediate frailty status met one or two criteria while robust men had none. We defined RHOA as a modified Croft score≥2 on hip radiograph. The relation of hip RHOA and RHOA and/or THR to prevalence of frailty status was examined using the proportional odds model adjusted for age, college education, and BMI ascertained at visit 2.

Results: We evaluated 4130 men with a mean age of 71.3(±5.4) years and BMI of 27.4 (±4.0) Kg/m^2. Of these, 415 had RHOA and 137 had validated THR (41 with RHOA in one hip and THR in the contralateral hip; 96 THRs with no OA in contralateral hip). Prevalence of robust, intermediate and frailty status was 41%, 47%, and 11%, respectively. RHOA was associated with greater severity of frailty status (multivariable adjusted OR = 1.24, 95% CI 1.01, 1.51). RHOA and/or THR was associated with a higher odds of worse frailty status (OR = 1.43, 95% CI 1.19, 1.72) after multivariable adjustment. Further adjustment for self-reported health status attenuated, but did not eliminate the association (OR = 1.34, 95% CI 1.11, 1.62).

Conclusions: There is a moderate association of RHOA and THR with frailty in elderly men. This finding suggests that interventions to reduce frailty may be warranted in elderly men with either RHOA or THR.

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EPIDEMIOLOGICAL ASPECTS OF OSTEOARTHRITIS (OA) IN THE LATIN AMERICAN POPULATION: A FREQUENCY STUDY

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Purpose: The aim of the present study is to investigate epidemiological aspects of Osteoarthritis (OA) in Latin American region.

Methods: A multi-center study was conducted in 13 Latin American countries that included 3040 patients evaluated at rheumatology outpatient clinics with defined ACR criteria of Osteoarthritis (OA). Epidemiologic aspects were collected using standardized questionnaire between July 1st and September 30th 2010 time period.

Results: Approximately 3040 patients met OA criteria for this study. The mean age of patients was 62.5 year-old. There was a 4.8:1 female/male ratio. Mean Body Mass Index (BMI) was 28.7. Overweight (BMI > 25) was seen in 79.4% while obesity (BMI > 30) in 38.1%. Approximately 88% of the patients had primary OA and the time of consultation with diagnosis made within 5 years. Specific OA joint involvement: only knee OA was seen in 948 patients (31.2%); only hands OA in 290 patients (9.5%); hands and knee OA seen in 699 patients (22.9%); DIP and PIP joint was found in 198 patients (6.5%); axial involvement (cervical and lumbar spine) was seen, together in 202 patients (6.6%); and hip joint involvement in 40 patients (1.3%). Radiographic severity of OA on the basis of the Kellgren-Lawrence grading scale (0–4) showed that 88.5% of patients had Kellgren-Lawrence grade 2 and 3. Treatments options for OA included: NSAIDs (15%); paracetamol (4.1%); hyaluronic acid (4.4%); glucosamine-sulphate (3.5%); glucosamine sulphate+chondroitin (5.2%); glucosamine sulphate +chondroitin+NSAIDs (12.2%); and glucosamine sulphate +chondroitin + others (5.8%). Comorbidities associated with OA: none seen in 577 patients (19%); hypertension seen in 391 patients (12.9%); hypertension+obesity in 284 patients (9.3%); obesity in 295 patients (9.7%); an osteoporosis seen in 118 patients (3.9%)

Conclusions: This is the first Latin American study to evaluate the frequency of OA in rheumatology outpatient setting. This study showed strong correlation of OA with age greater rate among women than men of the same age. In agreement with other epidemiological studies BMI correlated with frequency of OA. Knees and hands were the most frequently specific joints involved in OA. Treatment of OA between 13 countries showed a diverse spectrum ranging from a combination of analgesic to chondroprotection and viscosupplementation. Hypertension and obesity were two most common comorbid conditions more frequently found in our patients. Our epidemiological findings are in agreement with other epidemiological studies and provide a better understanding of the factors contributing to the development of OA in the Latin American population.